3413-13:JVD:329907

IN THE CLAIMS

Please cancel claims 35-45 and 54-56 without prejudice to their entry in a continuing application.

Please add new claims 69-103 as shown below.

Please amend claims 57, 58, and 65 as shown below.

1-56 (cancelled)

57. (currently amended) A method for providing a compound to a system comprising:

providing a compound releasably captured within a matrix material, the **compound** ~~[therapeutic agent]~~ being releasable upon receiving an energy input, a source of energy, and a controller operatively connected to the source and using a control signal to operate the source;

[~~measuring a response of a system ;~~]

[~~deriving a fractal representation of the response;~~]

preparing a control signal [~~based on the~~] **using** fractal **mathematics** [~~representation~~];

placing the matrix material and captured compound in fluid communication with the system; and

operating the controller with the control signal and providing energy to the matrix material sufficient to release a portion of the compound into the system.

58. (currently amended) The method of claim 57 wherein the compound elicits a response of the system **and the control signal is based on the response**.

59. (previously presented) The method of claim 57 wherein the system is the circulatory system of a biological unit and the response is a response of the heart.

60. (previously presented) The method of claim 57 wherein the system is the neurological system of a biological unit and the therapeutic agent is an anesthetic.

61. (previously presented) The method of claim 57 wherein the system is the neurological system of a biological unit and the therapeutic agent is a neurotransmitter.

62. (previously presented) The method of claim 57 wherein the matrix material is attached to a catheter and the catheter is inserted into the system.

63. (previously presented) The method of claim 57 wherein the control signal has a frequency content generally less that about 1 hertz.

64 (previously presented) The method of claim 57 wherein said operating includes releasing predetermined amounts of compound at variable intervals.

65. (currently amended) The method of claim 57 wherein said operating includes releasing variable amounts of compound at predetermined intervals .

66. (never filed)

67. (previously presented) The method of claim 57 wherein said operating includes releasing variable amounts of compound at variable intervals.

68. (previously presented) The method of claim 57 wherein said providing includes a sensor operatively connected to said controller, and a catheter, the matrix being attached to the catheter, and which further comprises sensing a second response of the system, wherein said operating is in response to said sensing.

69. (new) The method of claim 57 wherein the control signal is based on a fractal representation of the system.

70. (new) An apparatus for delivering fluid, comprising:

a tube having an interior surface and an exterior surface;

an inert polymer matrix attached to the interior surface, said polymer matrix defining a lumen therethrough for flow of the fluid; and

a compound covalently bonded to said matrix and releasable from said polymer matrix upon exposure to electromagnetic energy.

71. (new) The apparatus of claim 70 wherein said compound is releasably captured to said polymer matrix by photolabile bonds.

72. (new) The apparatus of claim 71 wherein said polymer matrix is a hydrogel.

73. (new) The apparatus of claim 72 which further comprises a source of electromagnetic energy for releasing said compound from said polymer matrix and a controller operably coupled to said source.

74. (new) The apparatus of claim 73 wherein said source is a laser and said tube transmits energy from said laser into said polymer matrix.

75. (new) The apparatus of claim 74 wherein said tube includes an opaque coating on the exterior surface for limiting the escape of radiation from the exterior surface.

76. (new) The apparatus of claim 74 wherein said tube includes a reflective coating on at least one of the interior surface or the exterior surface for reflecting radiation into said polymer matrix.

77. (new) The apparatus of claim 70 wherein said tube is adapted and configured to transmit coherent radiation into said polymer matrix.

78. (new) The apparatus of claim 77 wherein said tube includes an opaque coating on the exterior surface for limiting the escape of radiation from the exterior surface.

79. (new) The apparatus of claim 77 wherein said tube includes a reflective coating on at least one of the interior surface or the exterior surface for reflecting radiation into said polymer matrix.

80. (new) The apparatus of claim 77 which further comprises a fiber optic cable for coupling a source of coherent radiation to said tube.

81. (new) The apparatus of claim 70 which further comprises a source of electromagnetic energy for releasing said compound from said polymer matrix and a controller operably coupled to said source of energy, said controller operating said source of energy to provide energy to said polymer matrix in a fractally-based pattern.

82. (new) The apparatus of claim 81 wherein said compound is releasably captured to said polymer matrix by covalent photolabile bonds and said source is a laser generating energy capable of breaking the bonds.

83. (new) The apparatus of claim 82 wherein said laser irradiates the polymer matrix with laser pulses of varying time duration.

84. (new) The apparatus of claim 82 wherein said source is a laser irradiating the polymer matrix with laser pulses of varying radiation intensity.

85. (new) The apparatus of claim 70 wherein said compound is a first compound bonded to said matrix by first photolabile bonds, and which further comprises a second compound different from said first compound bonded to said matrix by second photolabile bonds, said second compound being releasable from said polymer matrix upon exposure to electromagnetic energy.

86. (new) The apparatus of claim 85 wherein the first photolabile bonds are releasable by a first wavelength of light and the second photolabile bonds are releasable by a second wavelength different than the first wavelength.

87. (new) The apparatus of claim 85 wherein said tube includes an opaque coating on the exterior surface for limiting the escape of radiation from the exterior surface.

88. (new) The apparatus of claim 70 wherein said outer sheath includes a first interior section and a second interior section, said first section including a first portion of polymer matrix, said second section including a second portion of polymer matrix, wherein said compound is a first compound releasably captured by first photolabile bonds to said first portion of said polymer matrix and which further comprises a second compound releasably captured by second photolabile bonds to said second portion of said polymer matrix.

89. (new) The apparatus of claim 88 wherein the first photolabile bonds are releasable by a first wavelength of light and the second photolabile bonds are releasable by a second wavelength different than the first wavelength.

90. (new) The apparatus of claim 88 wherein said tube includes an opaque coating on the exterior surface for limiting the escape of radiation from the exterior surface.

91. (new) A method for providing a compound into a flowing fluid, comprising:

providing a section of tubing, the tubing having an interior with a layer of an inert polymer matrix material attached to the interior, the matrix including a compound covalently bonded thereto;

flowing a fluid through the interior of the tubing and over the matrix material;

applying electromagnetic energy to the matrix material; and

releasing the compound from the matrix material into the fluid by said applying energy to the matrix material.

92. (new) The method of claim 91 wherein the section of tubing is a catheter, the matrix material is a polymer material, the fluid is infusate, the compound is a therapeutic agent, and which further comprises providing a mixture of infusate and the first compound to a person.

93. (new) The method of claim 91 which further comprises forming a lumen by the matrix material, wherein said flowing is through the lumen.

94. (new) The method of claim 91 wherein said applying energy is by irradiating the matrix material with a laser.

95. (new) The method of claim 92 wherein said applying energy is by irradiating the matrix material with a plurality of laser pulses of varying time duration.

96. (new) The method of claim 94 wherein said applying energy is by irradiating the matrix material with a plurality of laser pulses of varying intensity.

97. (new) The method of claim 91 wherein the fluid includes water and the matrix material is a hydrogel.

98. (new) The method of claim 91 wherein said flowing a fluid is flowing a fluid withdrawn from a biological unit.

99. (new) The method of claim 98 which further comprises conditioning the fluid and returning the bodily fluid to a biological unit.

100. (new) The method of claim 91 wherein said fluid is infusate being provided to a person at a constant volumetric flowrate and wherein said releasing does not alter the flowrate.

101. (new) The method of claim 91, wherein said providing includes a first container which includes the fluid, a second container for receiving a flow of the fluid including the released first compound.

102. (new) The method of claim 91 which further comprises delivering the first compound systemically to the biological unit.

3413-13:JVD:329907

103. (new) The method of claim 91 wherein said providing includes a source of light, the section of tubing has walls and an interior surface, the layer of matrix material is bonded to the interior surface, the tubing has an exterior surface coated to discourage transmission of light therethrough, and said applying energy is by light transmitted from the source through the walls.